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TAXONOMY OF *ERIGERON BELLIDIASTRUM* (ASTERACEAE: ASTEREAE), WITH A NEW VARIETY

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ABSTRACT

Erigeron bellidiastrum Nutt. var. **arenarius** *comb. nov.* occurs in trans-Pecos Texas, southeastern New Mexico and northern Chihuahua, México, and differs from both var. *bellidiastrum* and var. *robustus* in its lobed basal and lower cauline leaves. A key, distribution map, and summary of typification for the three varieties of *E. bellidiastrum* are presented.

KEY WORDS: *Erigeron*, Asteraceae, Astereae, United States, México.

Erigeron bellidiastrum Nutt. is a species of sect. *Olygotrichium* Nutt. (Nesom 1989) that occurs in sandy habitats of the western United States. It is recognized by its annual duration, the upcurved hairs of its stem, relatively few ray flowers with broad ligules, simple pappus, and particularly by a feature of its involucral/fruit morphology. Some of the ray flowers are interspersed between involucral bracts, and the mature achenes of these are held in place between the bracts as they reflex. These achenes apparently are not released until the involucre deteriorates. I have not seen this arrangement of ray flowers in any other species of the genus.

Cronquist (1947) correctly noted that the basal leaves of *Erigeron bellidiastrum* vary from entire to pinnately lobed, but he did not include observations on the geographic distribution of these variants. In fact, entire leaved plants occur widely over the range of the species, but plants with lobed or deeply toothed leaves are restricted to the southernmost portion of its range. Johnston (1970) observed that an "unnamed race" of this species occurs in trans-Pecos Texas, "marked by the dense, grayish hispid pubescence and small stature (8-11 cm)." Although Johnston's description of neither the species nor the "unnamed race" included lobed leaves, they are more diagnostic of these atypical plants than features of pubescence or reduced stature. These plants

occur in southeastern New Mexico and northern Chihuahua as well as their primary range in trans-Pecos Texas, and in the following taxonomic synopsis, they are formally recognized as a variety of *E. bellidiastrum*.

Erigeron bellidiastrum Nutt., Trans. Amer. Philos. Soc. 2, 7:307. 1841. TYPE: UNITED STATES. [Wyoming?]: "On the borders of the Platte, within the Rocky Mountains, [May-Jun 1834], *T. Nuttall s.n.* (GH!). As noted by Cronquist (1947), the NY! specimen labeled "Platte, Fremont" may represent part of Nuttall's original collection.

Erigeron bellidiastrum Nutt. var. *bellidiastrum*.

Erigeron eastwoodiae Woot. & Standl., Contr. U.S. Natl. Herb. 16:183. 1913. TYPE: UNITED STATES. New Mexico: [San Juan Co.], dry hills, N end of the Carrizo Mts., 30 Jul 1911, *P.C. Standley 7433* (HOLOTYPE: US!).

Utah, Colorado, Wyoming, [Montana], South Dakota, Nebraska, Kansas, Oklahoma, Arizona, New Mexico, and Texas; open habitats in deep, loose sand; 1050-1650 m; May-August(-September).

Erigeron bellidiastrum Nutt. var. *robustus* Cronquist, Brittonia 6:256. 1947. TYPE: UNITED STATES. Oklahoma: Greer Co., near Granite, in sandy grassy river valley, 18 Jun 1913, *Stevens 1015.1* (HOLOTYPE: GH!; Isotype: MINN).

Colorado, Nebraska, Kansas, Oklahoma, New Mexico, and Texas; open habitats in deep, loose sand; 550-1100 m; May-July(-September). Cronquist (1947) noted that this is "not a very strong variety," but I agree with him that it can be distinguished, both morphologically and geographically. Leaf shape appears to be a more decisive character than stem width for separating it from var. *bellidiastrum*. Intergrades are common where the two taxa are sympatric. The records mapped for var. *bellidiastrum* that are well inside the range of var. *robustus*, almost certainly represent small sized variants or otherwise depauperate individuals within populations of var. *robustus*.

Erigeron bellidiastrum Nutt. var. **arenarius** (E. Greene) Nesom, *comb. nov.* BASIONYM: *Erigeron arenarius* E. Greene, Bull. Torrey Bot. Club 25:121. 1898. TYPE: UNITED STATES. New Mexico: [Doña Ana Co.], sand hills near Mesilla, 17 Jun 1897, *E.O. Wooton 23* (HOLOTYPE: US!; Isotypes: NMC, RM!).

Basal and lower cauline leaves oblanceolate in outline, deeply toothed to pinnately lobed. Southwestern Texas and adjacent New Mexico and Chihuahua; open habitats in deep, loose sand, sometimes with oaks; 800-1300 m; flowering March-June, otherwise sporadically with rain.

Representative collections examined: MÉXICO. Chihuahua: 10 mi N of Samalayuca on Hwy 45, 20 Mar 1985, *Zika 8665* (TEX).

UNITED STATES. New Mexico: Doña Ana Co., Mesilla valley, 12 Jun 1900, *Barber s.n.* (NMC); Doña Ana Co., 3.7 mi NW of Anapra on Hwy 273, 26 Apr 1983, *Ferguson 243* (TEX); Doña Ana Co., mesa W of Organ Mts. near college, 24 Apr 1900, *Wooton s.n.* (NMC); Doña Ana Co., Mesilla valley, 10 Apr 1907, *Wooton & Standley 3298* (NMC). Texas: Andrews Co., vacant lots around town [of Andrews], 5 May 1959, *Scudday s.n.* (TEX); Crane Co., sandhills ca. 16 mi N of Imperial, 15 Apr 1949, *Warnock 8394* (TEX); El Paso Co., El Paso, 17 Apr 1884, *M.E. Jones 3710* (ARIZ, NY); El Paso Co., E of El Paso along Hwy 62-180, 4.0 mi E of jct with Hwy 659, 23 Oct 1983, *Worthington 11590* (TEX); Hudspeth Co., Indian Hot Springs, 20 Apr 1937, *Whitehouse 8441* (TEX); Jeff Davis Co., [locality unspecified], Apr 1929, *Ingram 2706* (LL); Presidio Co., 11 mi N of Porvenir, 17 Apr 1947, *McVaugh 7998* (TEX); Reeves Co., near Pecos, 5 Jun 1932, *Whitehouse 8460* (TEX); Ward Co., 3 mi ENE of Monahans, 6 May 1947, *McVaugh 8190* (TEX); Ward Co., 4 mi E of Monahans, 20 Jun 1948, *Warnock 7880* (LL); Winkler Co., 3 mi N of Wink on Rte 115, 9 Jul 1965, *Irving 89* (TEX).

Distribution records of var. *arenarius* shown on Figure 1 represent plants with leaves that range from pinnatifid to weakly trilobed. Particularly in Ward and Winkler counties, they have weakly lobed leaves and appear to intergrade with var. *robustus*. I cannot corroborate Johnston's observation that the plants of var. *arenarius* are shorter than others of the species or that they are consistently different in vestiture. The achenes of var. *arenarius* range slightly greater in length (1.1-1.6 mm long) than in the other varieties (1.0-1.4 mm) but there is significant overlap.

Chromosome counts (Solbrig, *et al.* 1964, 1969; Keil & Pinkava 1976; Nesom 1978) from var. *bellidiastrum* and var. *robustus* have all been diploid (n=9). Ward (1984) reported a tetraploid (n=18) in var. *bellidiastrum* from San Juan Co., New Mexico. No count is available for var. *arenarius*, but I have examined pollen from nine plants of it as well as five of var. *robustus* and found in every case, that the stainability is greater than 95% and the size and shape regular, indicating that the species is probably primarily diploid over its entire range.

KEY TO THE VARIETIES OF *ERIGERON BELLIDIASTRUM*

1. Basal and lower cauline leaves lobed or deeply toothed ... var. *arenarius*

1′ Basal and lower cauline leaves entire or rarely with a pair of shallow teeth .....(2)

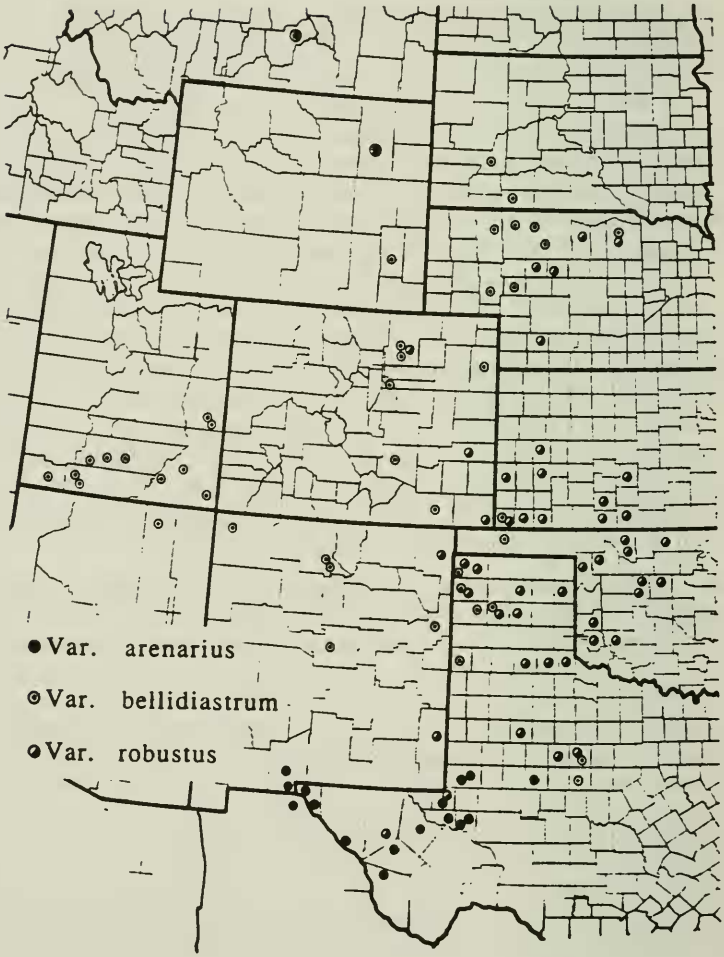

Figure 1. Geographic distribution of the varieties of *Erigeron bellidiastrum*, based on records seen by the author from LL, NY, TEX, and various other herbaria and on specimens cited by Cronquist (1947). The distributions of var. *bellidiastrum* and var. *robustus* are representative as shown but not complete. The two asterisks (Montana, Wyoming) represent range extensions by records on the distribution map published for the Great Plains flora (GPFA 1977) but not seen in the present study.

2. Lower part of stem mostly 1-2(-2.5) mm thick; largest leaves linear to linear oblanceolate, 1.0-1.5(-3.0) cm long, 1.0-2.5(-3.0) mm wide ..... var. *bellidiastrum*

2′ Lower part of stem mostly (2.0-)2.5-5.0 mm thick; largest leaves oblanceolate, 2-4(-6) cm long, 3-5(-15) mm wide .... var. *robustus*

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